ning, rain, hail, or wind. This symbol will be used to indicate all cases when the storm is supposed to have passed near the station.

T *Thunder.*—Distant thunder.

≤ *Lightning.*[11]—Distant lightning, usually called sheet or heat lightning. ≤⁰ faint lightning; ≤² brilliant lightning. When distant lightning appears at a definite direction in the horizon the observer should enter in the record the point of the compass, e. g., ≤⁰ NW. 10 p. for "distant heat lightning in the northwest at 10 p. m."

⟙ *Strong wind, or gale.*[12]—The feathering of the arrow may be varied to indicate the force of the wind according to the Beaufort scale, or the symbol, an arrow with 4 feathers, may be used to indicate a wind whose strength is 8, 9, or 10 on the Beaufort scale, or any velocity in excess of 50 miles per hour or 20 meters per second in absolute measures; ⟙² a remarkably strong wind or one exceeding 11 on the Beaufort scale or 80 miles per hour, or 35 meters per second.

⦶ *Solar aureole, corona, or glory.*[13]—Used for small circles of prismatic color surrounding the sun. The radii of these circles are usually less than 6°, but in the extreme case of Bishop's ring the radius is 15°. Several concentric circles are sometimes visible; each circular band of prismatic colors has its red on the outside and its blue, violet, or purple on the inside, with respect to the sun. Such rings are generally formed when the sun shines through a thin cloud, and may be seen if viewed through a neutral tinted glass or by reflection in water. A smaller circle surrounding the shadow of the observer's head is called an anthelion, aureole, glory, or fog shadow.

☋ *Lunar aureole or corona.*[13]—A small circle surrounding the moon similar to the solar corona.

⊕ *Solar halo.*[13]—Used for larger circles surrounding the sun, whose sizes are quite definite, namely, about 22° and 45° radius from the sun. They are easily distinguishable from the coronas by the fact that the colors are feebler and are so arranged that the red color is inside or nearest the sun and the blue color is outside. The greater part of the breadth of the halo is white. Complex combinations of halos, parhelia, horizontal circles, and vertical columns sometimes occur. In the symbol ⊕² the exponent indicates that the display is more brilliant than usual. A detailed statement of the radii or diameters of the rings and columns and of their arrangement should be given in the station journal.

☋ *Lunar halo.*[13]—A circle surrounding the moon similar to the solar halo.

◠ *Rainbow.*[13]—Brilliant rainbows may be indicated by ◠². When there are adjacent or supernumerary bows it should be indicated in the journal.

⌓ *Aurora.*—Any display of the aurora borealis or aurora australis.

⟑ *Zodiacal light.*—The International Conference at Innsbruck, September, 1905, recommended that observations of this phenomenon be made wherever practicable. It is seen as a triangular beam of light rising from the horizon in the west after the end of evening twilight in the winter and spring, or in the east before daybreak from September to January.

## DEPOSIT OF ICE COLUMNS.

By E. R. MILLER.

On December 25, 1905, the ground in the vicinity of Cabin John Bridge, eight miles west of Washington, D. C., was observed to be covered, especially where bare of vegetation, with a heavy deposit of ice columns. Where exposed to the sun the deposit had the appearance of rough shaggy fur; in shaded places the tops of the crystals were evenly covered with a thin crust of ice to which the crystals remained attached when lifted from the ground. The accompanying reproduction of a photograph shows such a fragment. The crystals photographed were about three inches long, and were of a fibrous appearance. The individual crystals were irregular in section and were from $\frac{1}{16}$ to $\frac{3}{16}$-inch in thickness. Most of the columns noticed had formed above the ground, but in some places they had formed in the soil.

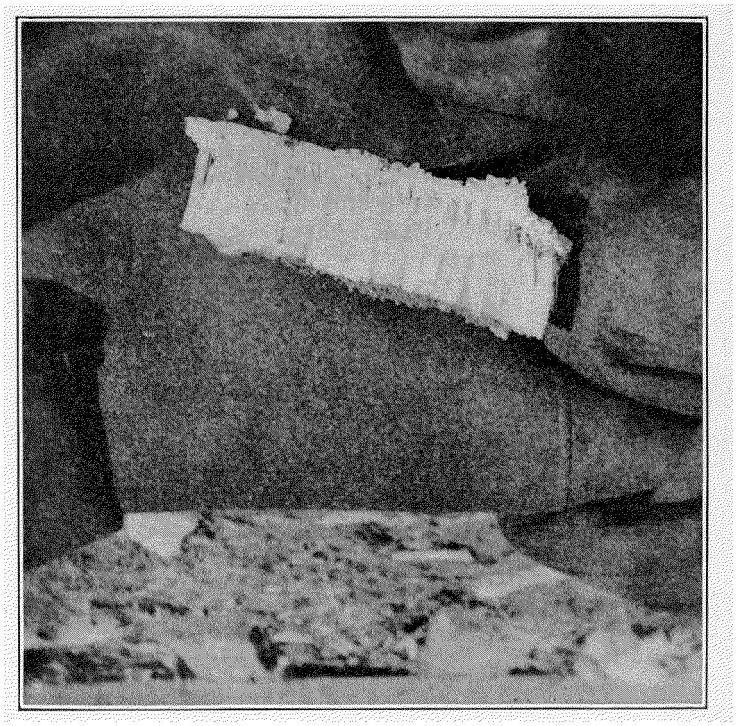

Fig. 1.—Deposit of ice columns.

The soil where the phenomenon occurred is loose and sandy. Rain to the amount of 2.03 inches (at Washington) fell during the night of the 20th and 21st followed by temperatures below freezing on the 24th and 25th, a minimum of 22° F. being recorded at Washington on the morning of the 25th.[1]

## THE CLIMATE OF MADISON, WIS.

By JAMES L. BARTLETT, B. S., Observer, U. S. Weather Bureau. Dated November 27, 1905.

### TOPOGRAPHY.

Madison, Wis., latitude, 43° 05′ north; longitude, 89° 23′ west, is situated in the southern portion of the State, about 75 miles west of Lake Michigan and the same distance from the nearest point of the Mississippi River. Locally, the city occupies a strip of land one-half to three-quarters of a mile wide, lying directly between Lakes Mendota and Monona, the former of which has an area of fifteen, and the latter an area of five square miles. The main portion of the city extends along the south shore of the larger lake. The site as well as the surrounding country is slightly rolling, some of the hills rising 100 feet, or more, above the level of the lakes. The elevation of the surface of Lake Mendota above mean sea level is 849 feet (see fig. 4).

### HISTORICAL.

Meteorological observations were begun in Madison at the north dormitory of the University of Wisconsin, by Prof. S. H.

[11] The exponent when employed with this symbol should indicate degree of brightness or intensity, not relative frequency.—*S. P. F.*

[12] The definition of a gale varies with every locality. At some places, notably Mount Washington, and Ben Nevis, winds of 10 to 15 meters per second, 22 to 33 miles per hour, are too numerous to be noteworthy, while at less exposed places they would be quite rare, hence the symbol should indicate the occurence of an unusually strong wind or gale.—*S. P. F.*

[13] The exponent should indicate brightness, not size or complexity of structure.—*S. P. F.*

[1] See Monthly Weather Review, vol. 26, p. 217, and vol. 33, pp. 157-8.